Appl. No. 09/822,709
Reply to Office Action of October 7, 2003

Docket No. EMC-005PUS

REMARKS

Applicants respectfully request the Examiner to reconsider and again examine the claims in view of the above-amendments and the following remarks.

Claims 1 –17 are pending in the application, Claim 17 being newly added by this Amendment. The Examiner objected to Claim 10 but indicated that Claim 10 would be allowable if amended to overcome the rejection of the base claims and any intervening claims. Claims 1-9 and 11-16 are rejected.

In accordance with the revised provisions of 37 C.F.R. §1.121(c) as enacted on July 30, 2003, a marked up version of the claims is provided hereinabove. Also attached are replacement sheets for the amended figures and sheets having markings to show changes made.

Applicants would like to make of record a telephone interview which took place with Examiner Namazi on January 6, 2004. During the interview, the Cabrera reference and the meaning of the term "collapsed extent" as used in the claims of the instant application were discussed. Applicants would like to thank the Examiner for the courtesy extended during the interview.

Proceeding now with a discussion of the instant office action, in response to the Examiner's request for prior art, Applicants submit that the query has been made and no additional prior art has been found.

The Examiner objected to apparatus Claim 13 for depending upon method Claim 11. Applicants have amended apparatus Claim 13 to depend from apparatus Claim 12. In view of this amendment, Applicants respectfully request that the objection to Claim 13 be removed.

Also, Applicants noticed a grammatical error in Claim 10 and amended Claim 10 to correct this error.

The Examiner rejects Claims 1, 6 and 12 under 35 U.S.C. §102(e) as being anticipated by Cabrera (U.S. Pat. No. 6,553,387).

Applicants submit that Claim 1 is patentably distinct over the cited reference since the reference neither describes nor suggests "... specifying one or more <u>collapsed extents</u> ... and recording the detail of the <u>collapsed extents</u>... " as set forth in Claim 1.

As described in the specification of the instant application, a "collapsed extent" represents a list of conventional extents. Thus, the conventional extents (e.g. extents of the type described in Cabrera for example) can be represented in a very concise form by a collapsed extent. Use of a collapsed extent, therefore, enables the efficient transfer of extent information between different parts of a backup system.

Furthermore, in the case where the number of conventional extents needed to backup an object exceeds the number of extents which the backup system can handle, a backup operation can not be successfully completed. By using collapsed extents, however, such a backup operation can be completed.

In contrast, Cabrera merely describes an <u>improvement to logical volume management software</u>. In particular, Cabrera describes a technique for determining if some part of a logical volume is stale. Cabrera mentions "extents," because volume managers typically deal with extents, but there is no idea of collapsing the representation of extents for any purpose. Applicants would also like to point out that Cabrera does not mention backup or restore techniques. Thus, Cabrera is not concerned with the number of extents used to represent an object.

In view of the above, Applicants submit that Claim 1 is patentably distinct over Cabrera.

Similarly, Applicants submit that Claim 6 is patentably distinct over the cited reference since the reference neither describes not suggests "... [a] method of backing up data used in a computer system having a client, a primary storage system and a backup storage system, the

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method comprising ... discovering one or more actual extents on the primary storage system ... collapsing the extents ... and specifying the collapsed extents to the backup storage system..." as called for in Claim 6.

Likewise, Applicants submit that Claim 12 is patentably distinct over the cited reference since the reference neither describes not suggests a "... backup and restore system for backing up and restoring files to and from a primary storage system coupled to a client, the backup and restore system comprising ... a processor for defining a logical backup object ... a collapsed extent processor for specifying collapsed extents ... means for starting data movement ... and an extent recording processor for recording details of collapsed extents..." as called for in Claim 12.

The Examiner rejects Claims 2-5, 7-11 and 13-16 under 35 U.S.C. §103(a) as being unpatentable over Cabrera (U.S. Patent No. 6,553,387) in view of West (U.S. Patent No. 6,446,175).

Cabrera is discussed above. The West Patent deals with a special configuration of backup, where the data is copied from one array to another in the form of a snapshot, and then copied to tape. There is no mention of extents or volume managers (although the word volume as in disk volume or tape volume occurs frequently). Moreover, West neither describes nor suggests collapsing of extents for efficiency or any other purpose.

Each of Claims 2-5 depend, either directly or indirectly, from base claim 1 which recites a method of backing up and restoring data in a computer system, the method comprising "... specifying one or more collapsed extents ... and recording the detail of the collapsed extents...."

Applicants thus submit that claims 2-5 are each patentably distinct over the cited references whether taken separately or in combination since the references neither describe nor suggest specifying one or more collapsed extents ... and recording the detail of the collapsed extents as called for in each of Claims 2-5.

Each of Claims 7-11 depend, either directly or indirectly, from base claim 6 which recites a method of backing up data used in a computer system having a client, a primary storage system and a backup storage system, the method comprising "... discovering one or more actual extents on the primary storage system ... <u>collapsing the extents</u> ... and <u>specifying the collapsed extents</u> to the backup storage system...."

Applicants thus submit that each of claims 7-11 are each patentably distinct over the cited references whether taken separately or in combination since the references neither describe nor suggest ... discovering one or more actual extents on the primary storage system ... <u>collapsing the extents</u> ... and <u>specifying the collapsed extents</u> to the backup storage system... as called for in each of Claims7-11.

Each of Claims 13-16 depend, either directly or indirectly, from base Claim 12 which recites a "... backup and restore system for backing up and restoring files to and from a primary storage system coupled to a client, the backup and restore system comprising ... a processor for defining a logical backup object ... <u>a collapsed extent processor for specifying collapsed extents</u> ... means for starting data movement ... and <u>an extent recording processor for recording details of collapsed extents</u>...."

Applicants thus submit that each of claims 13-16 are patentably distinct over the cited references whether taken separately or in combination since the references neither describe nor suggest ... discovering one or more actual extents on the primary storage system ... <u>collapsing the extents</u> ... and <u>specifying the collapsed extents</u> to the backup storage system... as called for in each of Claims 13-16.

In view of the above, Applicants submit that the rejection of Claims 2-5, 7-11 and 13-16 under 35 U.S.C. §103(a) should be removed.

In the Office Action, the Examiner indicated that Claim 10 would be allowable if amended to include the limitations of the base claims and any intervening claims. Applicants have added new independent Claim 17 which corresponds to Claim 10 re-written in independent

form including the limitations of base Claim 8. Thus, Applicants submit that Claim 17 is allowable.

In view of the above remarks, Applicants submit that Claims 1-17 and the entire case are now in condition for allowance and should be sent to issue and such action is respectfully requested.

The Examiner is respectfully invited to telephone the undersigning attorney if there are any questions regarding this Amendment or this application.
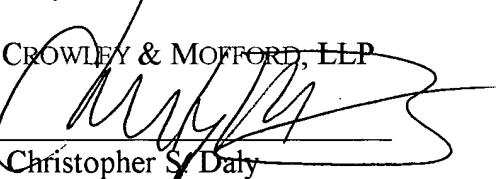
The Assistant Commissioner is hereby authorized to charge payment of any additional fees associated with this communication or credit any overpayment to Deposit Account No. 500845.

Respectfully submitted,

Dated: ___7 JAN 04___

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